

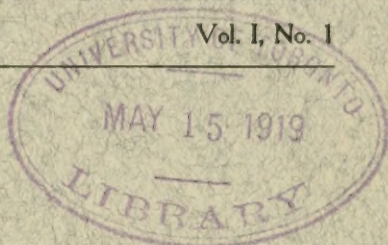
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THE ULTIMATE CONTINUITY

A RECONCILIATION OF THE FACTS CLAIMED IN
SUPPORT OF AUTOMATISM, INTERACTIONISM,
AND PSYCHO-PHYSICAL PARALLELISM

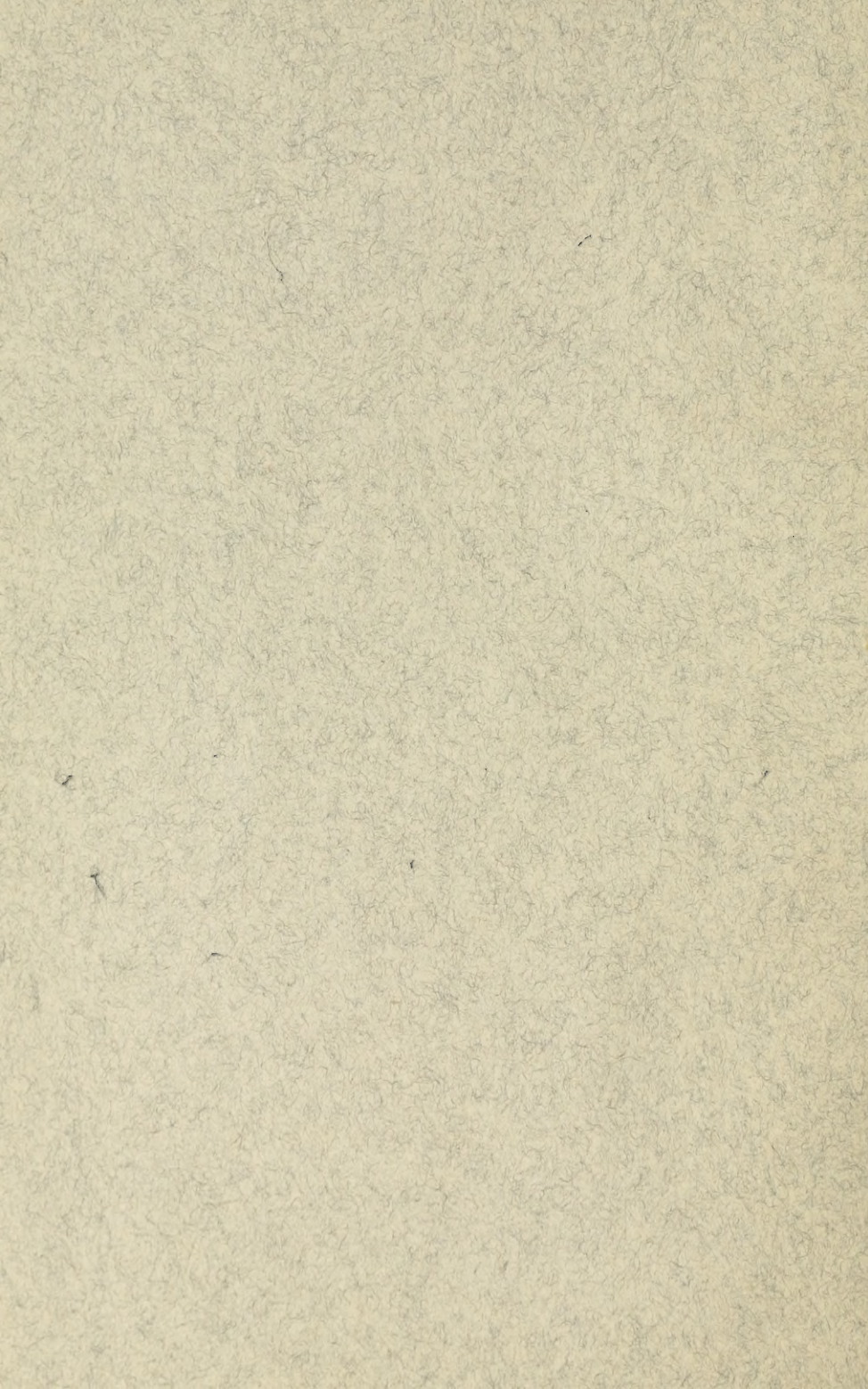
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ALBUQUERQUE, NEW MEXICO

December, 1918.

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THE ULTIMATE CONTINUITY

'Flower in the crannied wall,
I pluck you out of the crannies;
Hold you here, root and all in my hand,
Little flower; but if I could understand
What you are, root and all,—and all in all,—
I should know what God and man is.'

The poet's contemplation of the mystery in the constitution of the plant led him to postulate a continuity of life, if not of all existence. He saw a gradation of structure and function running from the plant to consecutively higher forms through man unto the highest conceivable existence—God. His train of thought was an illustration of the universal tendency of all minds. Certain innate dispositions characterize human consciousness. One of these is the recognition of the diversity revealed by the observation of phenomena, another is the idea of an underlying unity, a prevailing continuity, more or less limited.

All serious efforts to reduce the universe to first principles and first causes have encountered the presence of the Many and of the One. Intermingled with these invariable accompaniments, and sometimes in confusion, are other opposites—the passive and the active, the limited and the perfect. The chief of these opposing principles formulate themselves in the mind as the poles of a continuous reality, and all systems of thought seek to reconcile their implications, or bridge over the intervening gulf, by some satisfactory explanation of the relations existing between these extremes. Hence all philosophers, whatever they affirm or deny, have of necessity assumed a principle of diversity, of limitation, of passivity, and have posited opposite to this, a principle of unity, of perfection, of activity. These two groups of elements constituting widely differing principles form the hypothesis of matter on the one hand, and that of mind on the other. Some philosophers have denied the existence of matter, and others the existence of mind; nevertheless, all have experienced the necessity of ex-

plaining the interaction, or intercommunication, or whatever may be the relation between these fundamental entities.

The problem has proved worthy the best thought of science, of metaphysics, and of philosophy. The opposing views have been very pronounced, and the conflicts of opinion sometimes bitter. Those advocating the existence of matter and denying to mind a reality have sometimes been in the ascendancy. Usually their victory has been somewhat short-lived. With the swing of the pendulum of thought has come their submergence and the ascendancy of the supporters of the reality of mind. With each vibration of opinion new facts have appeared in substantiation of the one view or the other, always, with an advance nearer the truth, until the hope for final solution seems ever brighter; notwithstanding, a leading psychologist and philosopher has denominated this "The ultimate of ultimate problems." He may be right, even though the solution be rapidly advancing through the splendid achievements of science. Assuredly the answer may be considered ultimate for it would serve as a key to multitudes of minor problems. It would shed much light at once upon the important problem next in rank—"The relation of the individual soul to the universal soul."

The endeavors to discover the continuity between these opposing essences that might be final, to determine the reality of the world as we know it, have resulted in three definite views: Materialism, Realism, and Idealism. Each of these theories, expanding in its own domain by the accumulation of facts, has succeeded in embodying a modicum of truth, and has thus established a continuity within its own field; but has failed to reach one that is fundamental and that embraces all the human mind can realize as inherent in its inner self, and which it is able to experience or observe in external phenomena. Out of these have grown the theories prevailing today, in an age largely materialistic, but with promise of a view embodying the latest empirical facts of materialism, and still meeting the approval of philosophy. In psychology, the modern discussion has taken the form of support or of opposition to automatism, interactionism, and parallelism. It is the purpose here, after having shown briefly the leading claims and achievements, as well as the principal weaknesses and objections to each of these

hypotheses, to endeavor to state in outline the conception of a continuity worthy to be considered final and ultimate.

I. MATERIALISM.

Automatism under form of materialism is first in order. It has existed in some form, more or less explicit, since the rise of philosophic thought. With the exception of the period of the Middle Ages, when theological conceptions prevailed, it has held a place throughout the history of philosophy. The systems of the early Greek philosophers whose fundamental principles were conceived as physical substances—ether air, water fire,—were hardly materialistic because there was no opposition between the physical and the spiritual. The conception of matter as lifeless and of soul as immaterial had not been formed. The atomism of Democritus was the first real Materialism. The most thorough-going expression of this theory asserts that nothing exists except physical bodies and physical processes. Matter is dead and is moved only by mechanical forces. It has no psychic side and its laws are the expression of a blind physical necessity. Everything which exists is finally material in its nature; there is no reality of finite spirit, nothing that cannot be derived from the laws of material phenomena. Modifications of this extreme form have been variously offered, chiefly in three varieties: (1) The subordination of mental phenomena to the physical, especially to physiological processes as their cause. Here appear Automatism and Epiphenomenalism. (2) Matter is living and each particle or atom is conjoined with an atom of soul or has accompanying it an element of "mind-stuff." This is Hylozoism. In the atom, the material side is the determining element, the psychical is secondary or subordinate. (3) The position that energy is the ultimate reality, and that both mind and matter may be expressed in its terms.

The modern view of materialism embraces the belief "that matter and the various forms of physical energy are permanent and significant phenomena" ² that "mental processes depend entirely upon physical processes and occur only when physical processes reach a certain condition; they are not necessary and would cease if physical processes changed their character; but physical processes would go on undisturbed." Materialism

finds its evidence chiefly in science, but it does not refuse the facts of everyday experience. In accordance with the facts of science as known today, Materialism may justly claim that every mental process occurs in company with some physical process. The objection that only lower conscious processes are dependent upon neural action, Materialism would disprove by the claim that in nervous, or particularly brain disorders, there is loss of activity in the "higher" states. Moreover, the admission of the opponents of Materialism that the lower or sensational elements in consciousness are affected by stimulants, narcotics, and the general condition of the body, overthrows their own contention, inasmuch as they thus acknowledge that the higher states are conditioned by and dependent upon sensation elements. They thus permit the introduction of *indirect conditioning*, since the "higher" states are dependent upon the lower, and the lower upon brain events. The materialist confidently asserts that "insanity is brain disease," that "reaction to environment is the basis of conduct, of moral standards, of manners and customs, of work and play, . . . in fact, of all the reactions between human beings,—of the entire web of life." ³ And he reminds one who says, "I use my reason," that "the whiff of ether destroys its operation"; and remarks that "the desert traveller's moral nature may be reduced to a craving for a drink of water"², and a birthright of opportunity and responsibility may be sold for a pottage.

The chief arguments of Materialism find their support in apparent dependence of psychical processes upon physical; that the world is subject to rigid laws, believed to be mathematically accurate. If the full history of any individual and its species were known, every detail of the individual's conduct could be predicted. With the proper data, the materialist could have foretold the beginning of the present World War years in advance, of the mobilization of troops, when most people were confident in the belief that universal peace was near. Or he could with equal assurance tell the time, place, and terms of the convention of national representatives meeting to conclude peace at the end of the war. (Written 1915.)

THE GENERAL VIEW.

According to the materialistic view, mind is the result of evolution and has sprung from and developed along with the material world. All mental life as well as physical will cease when the sun has cooled and the source of energy is gone. Sentiments, hopes, aspirations, whatever their seeming reality, are all products of the nervous system. One had better learn to subordinate his purposes to the world as he finds it. The aims he realizes are merely the results of physical causation; they happen because they must happen. The world is mechanical, not teleological. Ideals in the lives of seers and sages are exceptional cases, and consequently are not explained by present knowledge. To cite them as proof of the pre-eminence of mind is to take refuge in ignorance and revert to the custom of primitive man in filling the world with spirits.²

The materialist's theory is the result of his nervous processes. If his brain were different, he would hold a different theory. Though he is convinced his mental life is conditioned by the physical, he is an exception. His mind is made up from evidence. Others' thoughts and beliefs are illusions. His theory is evidence of its own proof and an exception to itself, an exception to his own rule.²

The principle of transference of energy explains the continuity of physical action. The extent of the swing of the pendulum is conditioned by the preceding vibration, and the succeeding one by this one, and by the weight or spring of the clock. No new force enters anywhere into the circle of causality.²

After full acceptance of the materialistic theory, one still feels he has a certain confidence, he knows the truth. Is not the holding of confidence equivalent to saying, "The world will fulfill my expectation?" The materialist is certain that the world will not disappoint him. Here he steps outside his theory, because, according to it, his confidence is an illusion. But he believes in having a confidence and in knowing certain things. This his doctrine contradicts. Materialism is self-contradictory. Any theorist to be consistent must find a place for himself in the world of his creation. He is more than an on-looker; he is a participant.²

EVIDENCE FROM REFLEX ACTION.

Materialism has sought out and explained more facts than any other theory, therefore it has reason to claim proof from illustrative cases. In substantiation of this widely accepted view, a consideration of the empirical facts is justified. The theory postulates that every train of ideas has a counterpart in the neural mechanism corresponding to every shade of thought,—"No psychosis without neurosis". The phenomena of reflex action furnish evidence claimed by Materialism. Since the spinal cord and sympathetic system undeniably execute various deeds with the unerring accuracy of intelligence, are we not justified in concluding that the more complicated mechanism of the brain is capable of performing vastly more complex ideational processes without any outside intervention? The cerebrum must be capable of performing reflexes as much more complicated than the automatisms of the cord as it is superior to the latter in specialization. Since the sense organs stimulate the cord to intelligent action, may they not also arouse brain cells, which shall awaken others in regular sequence even to the excitation of the tract connected with muscular movement? The physical continuity is thus complete and the accompanying consciousness must be merely an epiphenomenon, or "The physical facts go along by themselves, and the mental facts go along by themselves If anybody says that the will influences matter, the statement is not untrue, but it is non-sense."⁴

This postulate of will is equally true of feeling, according to the Materialist. Since feeling does not influence nerve action, it cannot influence another feeling. Pain is not only incapable of causing tears to flow, but it cannot cause the sorrow or sense of loss accompanying it. Each of the feelings is merely the correlate of particular nerve action, which in its turn was caused by some preceding nerve movement.

Moreover, if consciousness can affect brain-action, we ought to be able to imagine it possible and even picture just *how* it does so. But who is able to image "The idea of a beefsteak binding two molecules together or a similar idea loosening the attractive force between them"?⁵

THE MIND-DUST THEORY.

Every thinker accepts the general theory of evolution. It deals with matter, its aggregations and separations. All new forms are the result of rearrangements of atoms originally existing in other combinations. No new factors need introduction into this continuity. With each material atom constituting the nebulae is associated an aboriginal atom of consciousness. Just as the atoms of matter are arranged to constitute a body and nervous system, the mental atoms are fused into a larger consciousness or mind. This is exemplified in the feelings of warmth and touch. "A feeling of temperature results when a sufficient number of the units of feeling are stimulated in continuous order without any interruption by any intervening feeling; and a feeling of touch is caused by a stimulation of units in interrupted sequence." ⁶ Also "musical sound. seemingly simple feeling is clearly resolvable into simpler feelings." For instance, if an anvil be struck with a hammer five or six times in a second, there is heard only a corresponding number of separate sounds; but if the strokes be increased to sixteen or more per second, the separate sounds are no longer distinguishable, but they have united into a continuous tone. Further increase of the number of blows per second merely serves to raise the pitch of the tone in a degree corresponding to the number of strokes per second. Thus out of several distinct units of sensation was formed a single sensation, which changed constantly in quality to agree with the change in the number of units. Since sounds are thus constructed from units of feeling, it seems perfectly natural to conclude that taste, smell, color, in fact, all other states of consciousness are built from germinal elements. And it seems we are safe in assuming that this ultimate unit of consciousness is merely a *nervous shock*, since the subjective effect produced by a sudden sound or by the passage of electricity through any part of the body is best described as such a shock. ⁷

THE DEPENDENCE OF MIND UPON THE BODY.

It is a fact of common knowledge that even moderate sensory stimulations change the content of consciousness, and that when the stimulus becomes excessive, as a blow on the

head, it diminishes the amount, and may abolish consciousness altogether. This seems to show the absolute dependence of mind upon body. Likewise stimulants and anesthetics, as coffee, alcohol, opium, hasheesh, nitrous-oxide gas, chloroform, and ether, produce similar effects, varying from slight modifications of consciousness to complete suspension. Also intoxicants manifest an influence widely varying from a pleasurable excitation to stupor and total anaesthesia.

Equally well known are the effects of wind and atmospheric conditions upon the moods of mind and the caprices of thought and feeling; the dependence of efficient mental action upon the requisite amount of food and sleep; upon the condition of the blood and nerve elements; nervous exhaustion and mental feebleness resulting from excessive intellectual or emotional strain; the increasing impotence of the mental powers that attends the loss of bodily vigor with the approach of old age. Though not so apparent to the neophyte, yet perfectly familiar to the pathologist, are the losses of certain sensations and memories following the destroying of brain tissue by cerebral hemorrhages, surgical operations, or accidents.⁸

From these irrefutable facts, it appears that the influence of the body upon the mind is much greater than that of the mind upon the body. Every instance in which a mental state produces a physical event can be matched by a case in which a physical cause produces a mental result. And the superior influence of the body on the mind is shown by the instances in which a neural event lessens the amount of consciousness or even threatens its existence. Mind seems never to be able to do more than change the position of matter, whereas matter can seemingly diminish or destroy the existence of mind. If stimulation in moderate degree is followed by consciousness and excessive stimulation by loss of consciousness, it must mean that ordinary stimulation or the brain action resulting from it is a necessary condition of conscious activity. It must mean that consciousness depends upon brain activity or is a product of it as the automatist asserts. The many examples of the dependence of the mind on body furnish strong proof, according to the first of the methods of verification, of the claim of materialism. If, in carrying out the second means of proof, by finding interpretation of the facts, there should appear

equal support to the materialistic view, its position would be well nigh impregnable. Unfortunately for the theory, such support is not discoverable.

OBJECTIONS TO MATERIALISM.

An analytical examination of the causal relation existing between the body and the mind as advocated by the materialist does not yield the results he attributes to it. Automatism asserts a one-sided causal relation in which brain events are always causes and mental states always effects. According to it physical events have two effects: First, another physical event resulting from it, which in its turn becomes a cause of still another brain event in the closed chain; second, a mental state which is no further cause of anything. Nowhere in the physical world upon which the automatist so much depends are there such effects as these. There are no physical effects that are not also causes. The energy principle gives every physical series a continuity. According to the abstract principle of causation, automatism finds no justification in attributing to physical events a causal power over mental events that is denied to mental events over physical ones, or in asserting that mental effects may not become causes in turn just as physical events do. It is illogical, in fact impossible to admit the existence of a physical cause of a psychic effect without admitting the existence of the psychic effect. It is impossible to consider consciousness an illusion and think it out of the universe without thinking away the very thinking itself. Further, automatism could prove its position were it able to show that an act of will follows a volitional brain event. But this is not warranted by the empirical facts or the principles of causality. It is only an arbitrary assumption on the part of automatism. The impossibility of understanding how a brain event may cause a mental state or even occasion itself to be immediately followed by such, is evidence of the difficulty encountered in establishing the conception of automatism. Finally, automatism may resort to metaphysics for its support. In the ultimate analysis of mind and matter, which of the two seems to afford the most plausible explanation of its creation of the other? (Can matter rationally be conceived as the source of mind?)

METAPHYSICAL ARGUMENT FOR MATERIALISM.

The answer to this question must be sought among metaphysical theories intended as interpretations of automatism. Consciousness is a fact, no matter how the brain may work under it. Since all knowledge is dependent upon the processes of consciousness, the problem as to what is the ultimate form of activity must be decided on broader grounds. There are two such explanations of this materialistic view: Psycho-physical materialism and psycho-physical phenomenalism. The views of various thinkers illustrated by that of Hodgson, assume matter a reality and consciousness dependent upon it. This view has the merit of making consciousness the result of a reality rather than a shadow, as is held substantially by the second theory. Critical inspection of this view plainly reveals its very obscure conception of consciousness. It evidently conceives the latter a mere series of phenomena, co-ordinate with the phenomena of matter and inferior in reality to the superfluous mental events of which it is the effect. The irrationality of its assumption is shown in the contention that the reality symbolized by the brain-process is still material, or partly so. Why a series of mental phenomena should be joined to the material events appearing as brain processes is the ever-present enigma. But equally enigmatic is the idea that consciousness should ever spring from such a material parentage. Plainly it does not explain the relation of mind and body, but only assumes the evident empirical connection to be a symbol of the ultimate conclusion which is really inexplicable; nor does it attempt to disclose in the slightest degree the cause and manner of the origin of consciousness.

Psycho-physical phenomenalism has already been referred to as employing a shadow for its foundation. Prof. Huxley's view well illustrates this *mirabile dictu*. The theory clearly demonstrates that matter is only a phase of consciousness. Nothing exists outside the individual. With equal assurance, founded on empirical facts, the theory asserts that mental states are the products and results of bodily processes. What a paradoxical combination these two empirically proved assumptions do form! The existence of consciousness dependent upon its own states! It is like the oriental fable of the earth being supported by an elephant, the elephant by a turtle, and the

turtle by something else (presumably the earth). Before the rise of consciousness there is no matter to give it birth, because there is no mind to which matter may appear as a phenomenon. The snake beginning by swallowing the end of its tail has succeeded in swallowing itself.⁸

Besides the facts above, the following arguments against materialism may be mentioned without effort at elaboration: (a) The nature of thinking as a reflective act involves a subject who sets himself over against his thoughts, his self-consciousness; (b) The common tendency to judge all knowledge ethically; and we value self-conscious, ideal things more highly than the material facts of objective science. It is because of such insubstantial arguments that Materialism has all but disappeared from philosophy. That it must ultimately yield the influential position it has so broadly held in the world of affairs since the middle of the past century, is evident from the necessity of the case as is indicated by the present trend of thinking. A tremendous blow to materialistic theory in its most subtle implications is even now being struck in the European situation.

SOME VALUABLE RESULTS.

The materialistic tendencies so prevalent in the world from time to time have had quasi-legitimate birth. They have emanated from scientific experimenters who tried to rise from science to metaphysics on the insecure foundation of too few proven facts. They have endeavored to stretch evolution as a law of nature to cover a field too widely diversified. While criticizing other theorists for not keeping their feet upon the solid earth, they have been the chief among offenders. No faith can exceed the faith of that school of philosophers. No theories can be more airy than theirs, though supposed to be based on substantial matter. No metaphysical heads have been more obscured by clouds than theirs.

Yet, the world of vigorous thought shall always owe much to the painstaking and tireless materialistic scientist. His definitely proved facts constitute a splendid contribution to the knowledge of the world. It is only when he has tried to use his vision, trained only to close and microscopic examination, to reach out beyond his realm for supplemental philosophic facts, and has tried to use his imagination, usually dormant,

to piece out his discoveries in order to form theories, that he falls into serious error. Where he has confined his efforts to his own field all is admirable and trust-worthy. These splendid results and accumulated facts may all be used to explain and supplement a theory more worthy and inspiring than his. The strength of Materialism is in its recognition of nature without trying to explain it away. Its weakness is its inability to account for consciousness either in nature or origin. Only here has it been reprehensible. When it could not walk by sight in the field of consciousness it stumbled, and in stumbling offended.

II. INTERACTIONISM.

ARGUMENTS FOR INTERACTIONISM.—Interactionism is the common-sense belief in the relation of mind and matter held by non-professional people. Its view is realistic and based upon the assumption that mind and matter have co-equal reality. It asserts that mind acts on body and body on mind. It endeavors to explain the surface facts of the relation of mind and body, how the body affects the mind in sensation, and how the operation is reversed in volition. In order to preserve the sequence necessary to causal relation, brain action is assumed to precede sensation, and volition to precede neural and muscular action.

The validity of interaction is in no way endangered by the fact that the causal relation cannot be perceived but only inferred from the perception of a uniform sequence. Undeniably there are immediate events between volition and movement which it is not possible to witness. There is the transfer of psychic energy to the brain substance or reception of the stimulus, the discharge of motor cells, the motor nerve-current, and the changes in muscular tissue on reception of the nerve excitation during the latent period. The unquestioned reality of these events precludes the possibility of the direct perception of the causal connection, yet no one can disprove such connection empirically.

Again, the intelligent character of the acts of consciousness in securing adaptation, in teleological fitness, argues strongly for the influence of mind on body. Many acts, both instinctive and voluntary, are adaptive in the sense of being suited to the

needs of the organism, and they also have an appropriateness in view of the dominant feelings as if they were caused by them. In fact, it appears that voluntary movement is merely a physical translation of the mental state.

Recent experiments in physiology furnish encouraging proofs for interaction. In the sham feeding of dogs, when the food swallowed does not reach the stomach, there is a psychical secretion of gastric juice caused by the taste, smell, or expectation of food.² Children into whose stomachs food is introduced directly, following the closing of the esophagus by accident, show the same psychic secretion of gastric juice on the expectancy of food. As a further indication of the effect of mental states upon bodily functions, it is observed that a substitute for food, such as chewing gum, did not cause the saliva flow, and an unpleasant emotion such as crying, immediately stopped the secretion of gastric juice. Added to these instances is the evidence established by the Harvard physiological experiments. The digestive activity of a cat was immediately and completely stopped by either fear or rage, when present even in small degree. The experiments have likewise shown the same inhibitory effects upon all bodily functions not immediately concerned in the efforts for defense or escape, by the increase of adrenalin in the blood, due to pain and hunger as well as to fear and rage.² These fundamental feelings and emotions thus seem to have undoubted influence both in inhibiting certain functions, and in supernormal stimulation of certain other activities, that is, those most needed to meet the demand set up by the mental state. The entire well-being and preservation of the organism seems to be fundamentally dependent upon the control of the bodily functions and activities by these emotional states. These recently discovered facts seem to demand a readjustment, if not the abandonment, of certain widely accepted theories.* They testify forcefully for interaction. Admitting the truth of these facts as establishing the influence of emotion upon bodily states, who could doubt the power of will upon the organism?

*For example, the James-Lange Theory.

CONSERVATION OF ENERGY AS PROOF.

When given unlimited application, the principle of the conservation of energy has been used against interactionism. When the law is used to exclude the possibility of the effect of psychic influence on bodily actions, it is *petitio principii*. It can not justly compare the total amount of energy at any one time with that at another time. It can only concern itself with the appearance in one form of energy when an equivalent has disappeared in another form. The conservation principle is made out on the validity of the equivalent principle and then suggests an additional pre-supposition: "No energy enters from without." All that appears in any one form can be accounted for by transformation. Equivalents have been proved for the inorganic world. Two scientists have recently tried to prove the law applicable to both animals and man. One of them found by experiments on resting animals that the food consumed could be measured as an equivalent in heat with a loss of only .47%. The other found even a less unaccountable fraction in experimenting with men at work. On first consideration, these experiments offer strong proof for the closed circuit of causation in the organic world. Naturally there arises the doubt as to whether the results would have been the same if any affective state or pronounced mental activity had been present. If fluctuations are no greater than the amounts found in the experiments, the differences are no proofs against interaction. One must prove that the whole energy of the universe is a closed circuit. He must not merely suppose it to be a fact and use it against interactionism. It may be that the energy produced by mental processes does not find expression in muscular activity. One cannot count the energy of cause by the energy of effect. The slightest possible amount of psychic energy interfering with a material event would break the law of the conservation of energy. The experiments cannot be regarded as decisive.

EVOLUTION AS PROOF.

The principles of biology and modes of evolution furnish an argument for interaction entirely irrefutable from any empirical standpoint. It is wholly irrational to believe that con-

sciousness should attend so closely upon brain states only as a useless accompaniment or product. Natural selection has never produced anything without purpose. Accepting for a moment the automatist view that consciousness is a product of evolution, it must then have a significant place in the conduct of organic development. It must have a work to perform. In the light of all observable facts and of reason, what is that purpose but to direct the well-being of the physical organism? That it should always appear when most needed and act in the most effective way is an enigma unless it has an effective purpose.

Universal acceptance of interactionism would not only explain the relation of body and mind, but also the interdependence of individuals in society. Its common-sense conceptions are readily accepted by parallelism. Interactionism assumes a duality. Wherever else in the world such concomitancy exists, there is assumption of causal relation. It is inconceivable that two different series of events should go side by side without some interaction. Psycho-physical causality is no empty relationship, but is exemplified by motives when the mind acts upon the body, and sensations when the body acts upon mind.

ARGUMENTS OPPOSED TO INTERACTIONISM.—To the casual observer, plausible indeed seem the arguments of the interactionist. This accounts for the wide-spread popular acceptance. But one cannot always indulge in mere passing thoughts and fancies. Such consideration of the standpoints begins to disclose weaknesses, and careful examination lays bare actual breaks in the arguments that finally disrupt the whole structure.

For instance, what is the correct conclusion to be drawn from the interactionist's account of the cause of muscular movement by an act of will? The interactionist acknowledges that between volition and movement there are intermediate events entirely concealed from view. He only assumes the action of emotion and desire upon the body just as he assumes the effect of volition, and without any apparent perception whatever. The directly perceived causal connection between will and cerebral action or muscle becomes merely an illusion, when analyzed, because it becomes evident that what was mistaken for a feeling of connection was really the *sense of activity* accompanying volition as its characteristic quality. Will is

always an active-feeling state, while thought, desire, and emotion may or may not be so. A paralytic may have a distinct feeling of activity and no movement whatever has taken place. Hence this argument claimed almost axiomatic by interactionism is seen to rest upon an error rather than a fact.

Since interaction assumes the exchange of energy between the psychic and physical realms, it is opposed by the law of the conservation of energy.² To meet the opposition offered by this law, interactionism presents the following argument: The energy content of consciousness expresses itself in the psychic life as thought, feeling, and will. Psychic energy occupies a position in the mental world corresponding to that held by thermal and electric forces in the physical world. The various forms of psychic energy are related to one another just as the modes of physical force are translatable from one to the other. Moreover, the members of each series are readily transformable into modes of energy in the parallel series. There is complete causal connection between the two circuits. When cerebral processes call forth mental images, a definite amount of kinetic physical energy corresponding in degree to the psychic activity vanishes. Also ideas and sensations transfer themselves into definite neural impulses equivalent in energy to themselves. How these psychic energies that so readily assume the form of physical equivalents are to be measured, has not been determined. But to explain the relation of conscious phenomena to cerebral and neural activity, such transformation of diverse energies must take place. Weiss' experiment on the sciatic nerve of a frog shows the nature of the relation and a possible manner for measuring and establishing the equivalent. If one one-thousandth of an erg of electricity applied to a nerve can result in a million ergs of muscular activity after having provided the required amount of heat necessary for the natural vital activity, how infinitesimal may be the amount of psychic energy necessary to stimulate brain or nerve to activity! And the refined brain energy resulting from this psychic transformation may be too small to measure by our crude means and yet be adequate to produce the various physical activities commonly resulting from its operation. Should such measurement eventually be made, the objec-

tion of interactionism to the conservation of energy would be at an end.

THE CONSERVATION PRINCIPLE AND FREEDOM OF THE WILL.

An active school of philosophy is endeavoring to establish this form of interaction against a general opposition to its limitation of freedom of will. This invariable determination of all mental life by an equivalent of nervous impulses, would seem to exclude all inclination to adopt New Year's resolutions or the effort to elevate one's self above his immediate environment by the formation and pursuit of worthy ideals. All inspirational and idealistic influences would seem to be barred. The interactionist who believes in independence of mind must therefore account for conservation in another way. He will admit the application of the law to the inorganic world, and to the organic wherever only matter operates on matter. But he will disclaim its effectiveness and validity, when it assumes to determine the relation of psychic force to physical force, or when matter acts on mind. There is lack of agreement between psychology and natural science. No observation of higher organisms has been made that is able to reveal the transformation of these two widely distinct forms of energy. No sufficient distinction exists between plants and lower animals and between lower animals and man to justify the attributing of the conservation principle to the former and not to the latter. The interactionist who believes that the conservation law does not include consciousness in principle, recalls perpetual motion from its Utopian exile, because every person under the appropriate exercise of his will is able to render to the world more by means of his labor than the world is able to return to him as an equivalent for his own nurture.

Compromise with the principle of conservation leads the interactionists into another difficulty: They must fill the world a second time with spirits similar to those primitive man found necessary to create in order to perform the wonders of the physical realm. These spirits are recalled to operate in the human skull as they formerly operated in the Material world. Thoughts and feelings are able to stop moving articles, or put resting ones in motion, and to perform other wonders.

The theorist cannot reasonably consider what is merely possible, he must bring forward only the probable, which best agrees with his facts. Years of careful research have forced the conclusion, against an established belief, that all causality in nature is a closed circle. By the observation of facts, men have been forced from a belief in the necessity and efficacy of spirits to conclude that only physical processes cause physical change. No good reason is apparent for believing the brain an exception to the rule governing the other organs of the body. Everywhere else the cause of change is apparent. Can we believe that in the brain particles are set in motion or brought to rest without apparent cause? Physiology declines to accept such a possibility. The physiologist refuses to depart from his axiom: "The causes of all physical processes are to be found in physical events." Physiology cannot support interactionism.²

THE MIND-SPLIT HYPOTHESIS.

It is difficult for one who holds the belief of interactionism that the higher mental states, as conceptions, logical conclusions and moral judgments, are really elaborations of lower, psychic elements, i. e., of sensations and mental images, resulting from physical stimuli, to answer satisfactorily the citation of the physiologist that all these higher states may be disabled or entirely eradicated by cerebral disease. It would seem they must be associated closely with, if not dependent upon, a physical basis. If their well-being and existence is dependent upon these material causes, how can they be an elaboration of the lower, psychic states? They can not be formed from the lower physical processes, according to the laws of physical causality as is claimed, because the lower nerve processes were assumed to expend themselves in forming the lower mental processes. The fanciful idea that the lower processes divided, part going to form higher nerve processes, and part to form higher psychic processes, where they would be again united, is hardly worth considering. Facts presented in opposition to interaction have justly led its adherents to desire a revision of the theory. It is useless to claim that the theory of conservation of energy and the closed circuit of causal connection in the material world are mere pet theories of cer-

tain scientists, or narrow generalization unworthy to be classed as theories. The centuries of growth through the accumulation of facts wherever facts could be found, make them fundamental and authoritative. Proof for the theory of interaction has been hard to find.* Psychology has usually preferred to accept some other theory.

What ground can interactionism find for support in the intelligent character of our acts? Why must intelligently adaptive acts be directed by thought or feeling? If psycho-physical correlation is admitted, and each mental state is accompanied by a brain event, mimicking it in all its details, is in fact its physical translation, what is to hinder the brain event from being the source of the adaptiveness of the action, as automatism asserts? The more we compare feeling, either pleasure or pain, with movement, the more we see how unlike they are, and how indiscernible is any connection between them. They seem simply juxtaposed. Since we know pain as indicative of processes injurious to the organism, and pleasure as related to those that are beneficial, it is readily determined by natural selection why we incline from the one and are attracted to the other. Thus the appropriate movements that were supposed to follow feeling, prove to be in reality, reactions to the bodily states which the feelings symbolize. This argument justly belongs both to parallelism and automatism.

What of the arguments based upon biology and evolution? The point of the argument is the development of consciousness through evolution and its existence along with the brain process. On evolutionary principles, the physical world would claim the power of producing consciousness as well as anything else that would be of service to the organism. It cannot be denied that through variation, selection, and inheritance, it has accomplished wonders. Yet in this particular it must utterly fail to "deliver the goods," simply because the physical world is material and consciousness is mental. It may produce organs and processes but not ideas and feelings. Thus from an empirical standpoint, interactionism has small basis of truth. However, it is well to

*Until Cannon's experiments.

submit it to metaphysical tests before making final decision as to its validity.

According to metaphysical procedure, any one of the theories defining the relation of mind and matter, should, in addition to determining the causal relations, explain why mind and body are associated at all, and evaluate the comparative reality of the two conjoined essences. Typical interaction is necessarily dualistic, as it must predicate a matter distinct from mind on which it can act. The matter which the interactionist postulates may be either the matter assumed by the untrained realist or it may be phenomenal matter; but in either case a matter distinct from mind. If by matter the realist means the matter of the naive realist, he is a psycho-physical dualist, and if his faith is in matter of the phenomenalistic order, he is a psycho-physical phenomenalist.

THE FUTILITY OF DUALISTIC THEORY.

It is useless to look to any dualistic theory for the explanation of the connection of mind and body, and for the reason why two such disparate things are associated, because dualism regards this association on the phenomenal plane as only the symbol of an association, in reality, too difficult to explain. In a self sufficient world of material reality, there appears no reason why consciousness should ever have arisen. If mind is not one of the material realities of the physical world, it cannot have been evolved by that world, and there is no reason for its ever having existed to be associated with matter. Thus the origin of mind is rendered irrational, and the nature of realities, uncomprehensible.

The interactionists who believe in psycho-physical phenomenalism, hold it is not necessary for matter to exist separately from the mind in order to be acted upon by it, for *action upon* as has been shown, only means an immediate and uniform succession, not a real perceptible influence or connection. The doctrine, then, really means that one mental state causes another mental state. For example, I will to pick up a book, and then perceive the movement as it takes place. A volition has caused a perception. The book and my hand are only phenomena, and, directly or indirectly, the will, one mental state, has caused a

perception, another mental state. Interaction is then the effect of one mental state upon another. The parent would not recognize or claim its child.

Equally diverting is an investigation of the relation between the volition and the brain event that precedes the movement of the hand in taking the book. Most interactionists hold that the brain event occurs subsequently to the volition, and some believe the two are simultaneous. To the former one may say, "How can an unspatial spiritual thing have any causal relation to a spatial material thing?" No answer. "Remember the relation between the mental and the physical according to your theory is that of reality to phenomenon. How do you explain the action of substance on shadow?" Still no reply. The absurdity is too evident.

To the latter, who believe that the brain event occurs simultaneously with the volition, since simultaneous events cannot be causally related, we may say, "What is the purpose of the volition? What that of the brain event?" Since each must have some function, Mr. Bradley has replied, "The two must be joint causes of the motor-discharge of the cells to the efferent nerve." It is well to note these joint causes before accepting his answer. The volition is a mental state, metaphysically real. The brain event is only a perception at best, though no one has ever yet been able to perceive just how the brain operates. It has no metaphysical reality. Just what aid it can render the volition in effecting the movement is hard to understand. To make them joint causes of the movement is like pretending that the horse's shadow which accompanies him so persistently and duplicates his actions so fully, aids him in drawing the load. Both movements and brain events, it must be remembered, are phenomena, that is, the load to be moved is a shadow. It may be fitting to conclude that the horse's shadow is sufficient to draw this shadow of a load. Then possibly the real horse draws the real load, and the shadow horse the shadow load, without any interacting influences. The notion of joint causation and the co-operation of shadows and realities follow naturally from admitting the simultaneity of the volition and brain event. The view that the volition is the sole cause of the movement more accords with common-

sense interactionism. Even the interactionist scarcely knows whether to believe that mind is a special mode of energy capable of give-and-take with known physical energies, or that it is able without expenditure of energy to deflect physical molecules.

III. PSYCHIO-PHYSICAL PARALLELISM.

While the theory of parallelism is ordinarily considered a deduction from the principle of conservation of energy, its source seems rather to be in the minute correspondence and correlation between the phenomena of consciousness and brain action. This relation is in no way considered a causal one. It is merely a thorough-going correspondence without the assumption of any responsibility of mind for matter. This correspondence extends not merely to the elements, but also to the relations on each side. The relation is similar to that of an English sentence to a Latin one whose thought it translates. It implies a mental series with each element and function holding exactly the same position and relation one to another, as corresponding elements and functions in a physical series. If a mental state is a cause in the one series, its cerebral correlate in the other series must also be a cause.

EXPLANATION AND FACTS FAVORING PARALLELISM.—This theory is merely a statement of the concomitance of conscious and nervous processes, and not an explanation. It is purely empirical and non-committal statement of relationship between mind and body,—a statement that can be reconciled with diverse forms of philosophical beliefs. It furnishes an admirable working hypothesis for scientific psychology. Probably its reason for non-explanation is that psychologists, whose purpose it most serves, realize that the facts in their domain are insufficient for its solution, and hesitate to follow it into the field where cause and origin form the proper material for logical investigation. Its advantage is in leaving the natural order of the universe intact, although it violates common-sense in making mind causally inefficient, purely epiphenomenal. Modern philosophers have been unable to agree upon the exact relation expressed by parallelism. The common-sense view of the average man was loosely held by Descartes, but his successors replaced that view with occasionalism. One phase of Leibnitz's philosophy is a psycho-

physical parallelism under the form of pre-established harmony. And Spinoza finally reduced mind and matter to parallel attributes of his monistic One Substance. A not uncommon way of stating the theory at the present time is the "Double Aspect Theory." This includes both a negative and a positive proposition. The negative asserts that the connection is not causal: "Mind does not act on body, nor body on mind; the changes on each side form two independent series, 'each going along by itself'." The positive proposition asserts that "The dualism is not absolute, only phenomenal, and the two series of phenomena are conditioned by an underlying unity of substance." This is practically the monism of Spinoza. This underlying substance is assumed in order to maintain the impossibility of any interaction.

Though the relation of mind and body has been recognized from the time of primitive man, the great dissimilarity between the two has prevented any wholly satisfactory explanation of the connection.² No direct relation can be seen. The methods of study of each are entirely different. It is not possible for a person to study both physical and mental processes at the same time. He may have knowledge of his own thoughts and feelings and may even studiously examine them; but he is unable at the same time to note whether or not changes are taking place in the brain. When he observes the brain of another, he cannot realize the thoughts and wishes existing there. He can at best only imitate them with similar ones. The activities of the brain and mind can never be observed at the same time. As a result, psychologists and philosophers have differed much in the form and results of their observations and have drawn very different conclusions. Each of the theories of this relationship has numbered formidable advocates among modern thinkers. But it appears that parallelism has the largest number of devotees.

One writer endeavors to explain the relation between the psychic and physical natures by the means of a system of mathematically arranged animated shells.² Their connection with one another, as experienced by themselves, is very different from

that observed by an outsider. The most elaborate illustrations of parallelism still leave something of the relation unexplained.

THE PSYCHO-PHYSICAL RELATION.

To ordinary observation, an external stimulus acting upon a person arouses nervous activity; this calls forth appropriate thoughts and decisions, which in turn issue in innervations causing muscular movements. Such reciprocal action of the nervous mechanism upon the mind, producing sensation, and of the thoughts and decisions upon the nervous and muscular organism, is denied by the parallelist. He explains the whole process very differently. From the receipt of the first stimulation by sight, sound, or touch, there is no intermittence of the physical activity until the termination in the movement of muscle. The nervous impulse from the sensory organs spreads itself throughout the brain, and after many separations and combinations, with interference here and reinforcement there, finally emerges at the periphery of the body as motion. The activities throughout remain a closed series. Beside this series is another of very different nature. From the auditory, visual, or tactual sensations, there arise thoughts, feelings, suppositions, resolutions, volitions, and finally, renewed perceptions. The two series correspond member for member, yet the members of one series do not call forth members in the other. That a member of one series seems to be the cause of a member in the other is no doubt due to their being experienced at the same time by the same consciousness. There is no justification in claiming that the mental phenomena result from the cerebral action, nor in believing that the mental activities arouse a nervous impulse or a movement of a muscle as the interactionist does. Likewise, each series is as real and important as the other. The materialist and the spiritualist are equally in error. Each series exists along side the other as a result of the constitution of the universe. They everywhere adhere closely together and are inseparable.²

The diverse views are evidently due to the point of departure and manner of procedure as well as to incomplete knowledge in endeavoring to relate mind to body. There are two chief arguments for parallelism: That from the principle of conservation

of energy and that from the nature of causal relation. The conservation principle, recognized by science, demands that the cause of all physical events must be from the store of physical energy in the world and not from the mind. The law is assumed to apply as well to the brain as to any other part of the physical world. Some science adopted parallelism in order that it might hold to the closed circuit of natural events. But it has failed to prove that the principle of conservation of energy applies equally in the organic and inorganic worlds. The argument from the nature of causal relation is based upon the fact that this relation is of such a nature that physical events cannot be connected with mental events, nor mental events with physical; but only events of the same order, both psychic or cortical, may act on one another. The relationship postulated by parallelism is not entirely disproved by the facts of science nor the arguments of other theories.

ARGUMENTS AGAINST PARALLELISM.—The denial of any casual connection between mind and body is not upheld by the facts of psychology and physiology, but is based chiefly upon the interpretation of the law of conservation of energy. It is maintained that the energy of the physical world is an invariable amount. The material world is a closed system. Mind cannot act on matter for there would thus result an increase in the amount of energy. This interpretation of the law has never been established on its own ground by physical facts. It is only a so-called generalization, based upon insufficient data, and really not worthy the name generalization. It was thus formulated: Energy is readily measurable. It has been found by careful and exact measurements that the amount of energy in a limited and isolated material system is invariable, though transformable into other manifestations. The conclusion was then drawn that conservation is true of all isolated finite systems. From this it was easy to say, the energy of the material universe is constant. No one ever considered it worth while to prove the universe a closed system. It may be isolated, it may not be. It may be finite, it may not be so. Assuredly we cannot measure its energy; and until measured, it is not proved that the conservation principle applies to it. If its physical portion is not proved a closed sys-

tem, then the physical energy of a given group of bodies may be increased or decreased without interaction among themselves. This transfer and transformation of energy from one psychic body to a physical one, or vice versa, and from body to body within the group, would not invalidate the law of conservation of energy interpreted as far as proven.

Two of the arguments against parallelism have become famous: The Austerlitz Argument and the Telegram Argument.² Parallelism sees no difficulty when, in the Battle of Austerlitz, it notes the impressions made on Napoleon's senses by the scenes and sounds of the approaching conflict, causing him to issue commands, the execution of which by his army wins the Battle, in assuming these mechanical events and not the genius of Napoleon the controlling factor. The perceptions, decisions, acts of will, which everywhere run parallel to these physical events have no influence whatever upon the particular material movements that take place. It is only necessary that they accompany the natural events. True, Napoleon's brain would not win the battle with his mind absent, with Napoleon asleep. A certain definite operation of physical functions demands a corresponding operation of psychic functions. But they in no way aid or interfere with one another. When purely mechanical forces determine the aggregation of nebulae into planets and solar systems and direct the life and movements of plants and lower animals, may not the brain with its astounding intricacy of structure and inconceivably complex activity be sufficient cause for the utterance of the few significant words?²

In the Telegram Argument, parallelism says through Mr. Ebbinghaus, that frequently, simple, mechanical devices very similar to one another, operating as causes, terminate in widely diverse results. The two keys intended for the same lock are almost exactly alike, yet the effect of their operation is quite the opposite. It must be there is enough difference between the form of the words in the two telegrams to account for the different actions of the merchant. In making this statement, parallelism overlooks the fact that it is not merely the sight of the two words almost alike that moves the *father* in each instance. It is rather the world of stored experience and knowledge closely connected

with his inmost self that is discharged by the meaning of two words, so like in form, but of almost opposite import, and causes his delight in one case and distraction in the other. It is unreasonable to believe that two sensations so similar can be the mechanical means of such opposite actions. The intervention and operation of very profound feelings seem necessary.²

The attempt of parallelism to secure a foundation for its argument by citing a complexity of brain structure to correspond with the variation of psychic processes, results in a proof equally favorable to interaction.

The claim of some opponents of parallelism that it involves passivity of mind is incorrect. Since correspondence extends to causal relation, according to parallelism, it must exclude passivity. Brain events are active things, hence mental events must be active. The two series must each be complete: A sensational brain event causes a volitional brain event; the sensation must cause the idea, and the idea, the volition, to make parallelism complete. While this much of consistency must be conceded to parallelism as its due, the immediate difficulty arising at the termination of one of the series is not explained in any way by empirical parallelism. The physical series does not end with the volitional brain event. It goes into the motor discharge and motor nerve current and muscular movement. But the psychic series seems to stop. At least no explanation is made of the efficiency of the volition. It seems entirely unavailing and loses itself in space.

THE METAPHYSICAL ARGUMENT.

Reference has been made to the metaphysical conception of dualism underlying the doctrine of parallelism. While this idea of an independently real material existence is entirely harmonious with interaction, the doctrine of two parallel series almost invariably suggests that one is apparent and the other real. To a philosophic mind, the exact correspondence of the two series is an enigma. This conviction of the reality of the one, and the mere appearance of the other, assumes two forms: One, psycho-physical monism, makes the physical and mental series coordinate in reality, and both, manifestations of a single being; the other, psycho-physical idealism, makes the mental series the

reality and the physical one the phenomenon. One of the forms of psycho-physical monism, which makes mind and body *aspects* of One Substance, really becomes a phenomenalist dualism, because it does not explain how two things of opposite nature can actually be one reality. The other form, which assumes the two phenomena *attributes* of the One Substance, a thing-in-itself, becomes the theory of the Unknowable; or, the One Substance, which manifests both as the mental and the physical, may become a *tertium quid*, without abiding place in metaphysical principles.

• Psycho-physical idealism claims the thing-in-itself, symbolized by the brain process, is really consciousness, thus making consciousness the reality and cerebral activity the phenomenon. Out of this view naturally arises an interesting question: Since the brain process is only an appearance in some consciousness, in one's own during introspection, or in that of the observer, during external observation, how can the two occur at the same instant as parallelism asserts? Is not the brain event a perception of some one's consciousness and thus an effect of it? If so, the temporal relation must be that assumed by the interactionist, the brain event being subsequent to the conscious perception. And the parallelist must mean by the brain event that it is either the perception or simply the mental state regarded as a perception. Then there is instead of simultaneity, identity; and no parallelism. Psycho-physical idealism thus becomes a doctrine of identity instead of parallelism. Thus, all the arguments offered by parallelism seem insufficient to prove its case. The conservation principle is based upon an assumption it cannot prove, the causal relation argument is based upon the idea that mental and physical events are simultaneous, the biological proof fails to show the origin of consciousness. Since biology and physics appear to arrive at different conclusions concerning the efficacy of consciousness, neither seems able to prove the theory.

IV. THE ULTIMATE CONTINUITY.

In the introduction of this thesis, reference was made to the statement of a continuity all-inclusive enough to be final. The idea of such a continuity seems to approximate nearer and nearer

a formulation in thinking minds generally. "Postulating more unity than the first experience yields, we also discover more."¹⁰ Also, "that there is more order in the world than appears at first sight is not discovered till the order is looked for. The first impulse to look for it proceeds from practical needs. But the practical need is only the first occasion for our reflection on the condition of true knowledge. and the intellectual satisfaction which at first comes to man without reflection, at last excites in him the conscious wish to find realized throughout the entire phenomenal world those rational continuities, uniformities, and necessities, which are the fundamental elements and guiding principles of his own thought."¹¹ It is true that "coming events seem to cast their shadows before." The many increasing revelations of continuity in various realms of human life tend constantly to strengthen the conviction that such a fundamental one exists. The following sentences written about ten years ago express the view of a well-known philosopher at that time:¹² "But absolute unity, in spite of brilliant dashes in its direction, still remains undiscovered, still remains a *Grenzbegriff*. Even 'not quite' must be the rationalistic philosopher's last confession concerning it." Whether this clear thinker's "not quite" became "even now" before his death, is not certain. Instances in widely diversified fields show the gradual development of many fore-runners of a greater continuity. Or rather, there arise to the surface in the wide stream of human endeavor, arcs of this great circle, while the main body of this endless chain of reality remains obscured by the foam and spray of appearances.

INSTANCES OF MINOR CONTINUITIES.—The first tendency to find an underlying unity that shall give meaning to the universe is that in philosophy and metaphysics. Centuries ago materialism began by creating a supposed reality that existed for itself and became the origin of all else. "We may speculate about the mechanical theory of things as we will; it has, nevertheless, the grand merit that it lets us look into a unity of problems, while at the same moment it affords us a first small victory as a pledge that we are on the right path".¹³ Even today such a circle of events is claimed for materialism by various scientific thinkers. It is held that the chain of organic events in animals and man

includes both the physical and mental. There is no break in the physical series to admit the thinking and feeling life of man, but all is a natural result of the influence of environment upon the simplest imaginable form and expression of life: the form, but the tiniest bit of undifferentiated protoplasm, the expression, only the automatic absorption of nourishment and multiplication by dividing the body. From this infinitesimal form and life, extends an unbroken continuity to man. One writer says "Where are we to draw the boundary line and say 'here the ego—the will—the reason—emerges?' What attribute, after all, has man which in its ultimate analysis is not possessed by the lowest animals or by the vegetable creation even? From the amoeba, on through all stages of animal existence, every action is but a response to adequate stimuli; and as a result of adequate stimuli, each step has been taken toward the higher and more intricate mechanisms which play the higher and more intricate parts in the great scheme of nature."¹⁵ This is certainly a stronger announcement of the belief in a closed circle than materialism had formerly uttered.

A LIFE CONTINUITY.

A continuity in human life has been recently presented by a distinguished physician before a body of his fellows.¹² After having shown that the traditional study of man insisted upon his existence in triune form,—body, soul, spirit,—thus giving rise to the three "ologies" for the study of each side of his nature, he says, "Psychologists, physicians, priests, are now joining hands as never before in the great world-wide movement for the betterment of man," for the "new science of sociology is combining the functions of all three. My theses. . . . will go beyond this common argument, for I shall maintain. . . . that the old division between body, soul, and spirit, is non-existent; that man is a unified mechanism. . . ." He then proceeds with clearness and convincing proof to show continuity in the life of man. One cannot but admit his force and wide knowledge, though not agreeing with him that environment alone "has been the actual creator of mankind." Had he been willing to admit instead of a blind negative conformity to the impacts of environ-

ment, an innate active principle determining the course of adaptation to impressions from without, one could agree thoroughly with his view. It is, in fact, remarkable how near his theory, though intended for a widely different purpose, comes to a greater truth than he evidently suspects. How many times his statements, with only a change of a word or two, become the language of a much broader theory. For instance, in his final hypothesis where he says "We expect to prove that any 'psychic' condition *results in* a definite depletion of the potential exertion of which it is the representative," by the substitution of the word "causes" for the words "results in," is made to read "We expect to prove that any 'psychic' condition *causes* a definite depletion of the potential energy in the brain-cells which is proportionate to the muscular exertion of which it is the representative." Should he prove this, which would be easy for one of his keen perception, it would overthrow all his remaining hypotheses, and refute his main argument. Nor does he seem to realize the full implication of his statement, "According to our observations, no amount of physical trauma inflicted upon animals will cause hyperthyroidism or increased adrenelin in the blood, while fear and rage do produce hyperthyroidism and increased adrenelin. This is a statement of far-reaching importance and is the key to more than an explanation of many chronic diseases." How easily he refutes his own "mechanistic view" and breaks the circle of physical causality. Plainly, he admits here the influence of emotion upon the sympathetic system and thus upon the body organism. This result he elaborated by saying, "The effect of the emotions upon the body mechanism may be compared to that produced upon the mechanism of an automobile if its engine is kept running at full speed while the machinery is stationary. The whole machine will be shaken and weakened, the batteries and weakest parts being the first to become impaired and destroyed." His claim that "On this mechanistic basis the emotions may be explained *as activations* of the entire motor-mechanism" does not by any means explain them. It is to be regretted he neglected to give the explanation. Perhaps a matter so trivial did not seem to him worth while explaining.

These admissions of Dr. Crile, taken with the discoveries of Prof. Cannon (and he refers to Prof. Cannon's experiments), furnish new testimony as to the effect of emotion upon the organs of the body. Prof. Cannon's experiments running through some four years have resulted in the discovery of a group of remarkable alterations in the bodily economy, regarded as responses whose purpose is the preservation of the individual, and resulting directly from fear, rage, pain, and hunger. The results of his findings seem not only to oppose the James-Lange theory of emotion and its physical expression, but to furnish striking support for the influence of mind upon matter.

THE CONTINUITY OF IDEALISM AND PHILOSOPHY.

Idealism has been equally active in endeavoring to establish a unity. All along through the history of philosophic thought, idealism has endeavored to unite all things with mind as the source and foundation of unifying reality. The panpsychism of Fechner and Clifford, the psycho-physical idealism of Paulsen, the monism of Stout,—all have sought that which might establish universal unity. In philosophy, though admittedly not in industry and science, the tendency today is to support a psychic or a spiritual unity.

As investigation into all fields of thought develops a more complete body of knowledge, each separate realm of mental activity approaches an underlying universal truth common to all. Every science as well as every pretentious line of mental activity seems only different phases of one comprehensive whole to be reached by any one of them and whose place shall be that of ultimate truth.

UNITY OF EFFORT.

Beside the tendency of science, of philosophy, and of all truth to seek an underlying unity, such proclivity is a characteristic of men today in their principal activities and modes of thinking. Such co-operative and unifying movements have long been effective in industry and commerce. Those who engage in industrial activities are all thoroughly organized and in most cases there is a union of the great co-operative heads. This is

true of both labor and capital. "It is a day of organization." Organization of labor has progressed to the American Federation of Labor; capital, through manifold trusts, to an all-powerful financial trust. In commerce, progress has been made from the condition in which every tradesman, either individual or national, expected to cheat, or take advantage of the one with whom he exchanged products, until it was seen that both might be benefitted by an exchange, without fraud. Commercial restrictions and trade laws hedged in nations until this unifying spirit has created reciprocity in a large part of the world. Commerce becomes more and more free. Thus industrial and commercial activities become less competitive and more co-operative.

Whatever one may think of the present attempt of the neutral nations to devise a plan for peace, undeniably The Hague has been and its results will continue to be a most potent factor in unifying the people of the world. Just now (Dec., 1915) announcement is made of a call for a world conference to consider plans for the unifying of all religious creeds and faiths, thus revealing the widespread inclination to recognize the common brotherhood of man.

Fifty years after the union of the states in America, the president of the Union issued a proclamation guaranteeing protection to the South American and Central American republics, that had a profound significance for the ultimate union of a hemisphere. After practically one hundred years, the implication and result of that proclamation are being disclosed. The protectorate established over the weak republics by the Monroe Doctrine has been proved without ulterior motive and is now leading to definite unity and co-operation. Within the month, the president of the United States has outlined to the Pan-American representatives a comprehensive plan for future harmonious relations. The governments agree to guarantee to each other absolute political independence, to settle all disputes by arbitration, and to give mutual aid in discouraging and suppressing revolution in any form. When the salutary results of such co-operation are better known, who can doubt that the way to a union of the governments of the western world will be made clear?

A WORLD BROTHERHOOD.

Notwithstanding the severity and bitterness of the conflict across the Atlantic, far-seeing men have repeatedly predicted a United States of Europe as the only logical conclusion of the war. No one who accepts the teachings of history can doubt that benefits greater than have been imagined will inevitably arise with the adjustments following the establishment of peace. Though the war has seemed a disruption of civilization, it must ultimately prove an important factor in the establishment of perpetual peace. Assuredly there are those who think that only suffering and death and poverty,—the desolation of a continent,—can be the outcome of the world war. But there are those who will still unhesitatingly affirm that whether it be the participants in the struggle that shall bring the final good, or the Spirit of the World working through them, in this “soul-trying moment, when Fate’s scales seem to quiver, is of small account”¹⁰ so long as they hold to the belief

“ that somehow good

Will be the final goal of ill.”

They will be assured that more of good to humanity as a whole, more of freedom, more of unselfish service, will henceforth bind men into a brotherhood all-inclusive and world-wide.

Thus it is obvious that in the material world, in the evolutionary development of life, in the institutions of society, in man’s life relations with his fellows, and in all the researches of science, the annals of history, and conclusions of philosophy, there is being progressively revealed a unifying principle suggesting a final continuity.

The Substantial Continuity.—These instances of connections where relations were formerly not apparent are mere elements in the greater unity implied in the title of the thesis. Considering the cues which have been given occasionally in the preceding discussion, it will not be a matter of surprise when the simple announcement is made that this underlying unity connecting existence in all its forms and phases is Spirit. Pre-existent to the cosmos or even to chaos, as usually understood, is this all-pervading Spirit. To arrive at something of an understanding of how this undifferentiated essence may have undergone modi-

fication from the condition assumed in the preceding statement down to the conditions as we know them today, under which the most diverse manifestations could ordinarily be predicted regarding Spirit, a brief statement of the processes undergone and the forms assumed by It may seem necessary.

THE INVOLUTION OF SPIRIT.

Before the *evolution* of the organic world, as we understand that theory, or even the existence of the material world, there was *involution*. Since only Spirit existed, involution could only concern that Essence. Omnipresent, omniscient, omnipotent, conscious Spirit, doubtless desiring to gain the experience of self-consciousness, undertook its involution. Through the exercise of infinite power, it clothed its pure form in a body of manifestation, if possible, less spiritual and more approaching the material in its nature. At the same time that Spirit limited itself by the assumption of form less free, it confined itself to such a portion of space as might be necessary for the development of a universe. Since our own is the only one with which we are concerned, let the word be understood to mean that universe of which our solar system is a part, and our chief interest. This more material manifestation of Spirit by which it has assumed a bondage, may be termed the World of Mind or Thought.

Desiring a still further excursion into new manifestations, this same self-acting entity, carrying with it its body of Mind-world, drops one phase lower in the scale of existence, tending toward the material world, and assumes a second body more gross than the first, involving the World of Force. This is the fundamental energy that manifests as the various modes of physical force that we know as operating in the material world. A further step lower, and the assumption of another world-body brings the involving Spirit into the manifestation of the Form of Matter,—the Material Universe. It is evident that each step in this descent in involution has added a new limitation upon the freedom and natural essence of Spirit. Its creation of the Thought World resulted in the bringing into existence of an entity, which, because of its nearness to Spirit, must be intelligent and conscious, yet which cannot possess the freedom and

infinitude of Spirit. The assumption of the form one phase lower, or the creation of the World of Energy, still further limits the true nature and freedom of Spirit. And the last World of Matter is so gross a manifestation and so widely divergent from true Spirit, and in which it has lost so much of its nature, that under certain conditions, it even finds difficulty in manifestating through it. But this lower material world, though created from and by Spirit, constitutes so much of a thing-in-itself, that to all intents and purposes it may be considered a distinct world. There are in reality, then, two species of substances, entirely distinct things, which the naive investigator has not hesitated to call mind and matter. Both bodies and minds appear to us as substances. We ordinarily dwell upon the co-existence and not the inclusiveness of these substances. And since in all the universe nothing but Spirit prevails, and if this material world is to be perceived at all, it must be perceived by Spirit, such perception may be likened to a person perceiving his own hand or the movement of his foot. This, of course, involves the idea that the mind of a person perceiving and his body together constitute his personality.

This descent of Spirit into lower realms, or "fall of man," and the extreme limitation of its freedom from its natural state to its operation in the material world, may be made clearer by an illustration. Assume a skilled operator upon the typewriter. Suppose he begins to restrict his freedom of movement, first by putting on a pair of thin, silk gloves. It is evident that his speed would be diminished and his freedom of movement restricted. Plainly he is not able to operate as readily as before. Suppose now he puts on over these a pair of buckskin gloves. He finds it still more difficult to manipulate the keyboard. Let it now be supposed that he add as a further check on his freedom of movement, a pair of thick, woollen gloves over the others. He now finds himself wholly unable to write with accuracy or facility, in fact can hardly operate upon the machine at all. So, Spirit finds itself manifesting through the forms of the Material World which it everywhere interpenetrates. Just as energy permeates the material world, so does thought, as a more tenuous and more subtle entity, permeate the world

of energy and at the same time the material world. Spirit, then, interpenetrates all forms and substances, and likewise all space, terrestrial and inter-stellar.

When Spirit has so solidified itself through involution as to form successively the Mind World, less conscious and free than Spirit, and then the World of Force, with still less of consciousness and initiative, and finally the Material World, a large part of which is often thought of as "dead matter," the work of evolution begins.

EVOLUTION FOLLOWS INVOLUTION.

Granting the reality of the transformation of Spirit as herein set forth, the continuity from pure, original Spirit to the grossest form of unorganized matter, follows as a matter of course. The further purpose is to show an equally certain continuity in the ascending scale, or evolution. At the present time, science has almost entirely bridged the chasms that the limited knowledge of former times believed to exist between the different spheres of existence and of life. More and more as new facts are gathered, these gulfs grow narrower, and the theoretic bridges become solid structures. "In spite of all adverse circumstances, transitional forms have already been discovered in considerable numbers, while it is fair to expect that many more will be discovered when by and by we have come to know the earth's surface more intimately".¹⁴ How long it may be until science and intuition, working hand in hand, will have established an unbroken line from lowest known matter to most mystifying and intelligent spirit is not readily predictable. That such continuity must exist to substantiate facts and to satisfy insight (and faith), there can scarcely be any doubt.

CRYSTALLINE ACTIVITY SIMULATES ORGANIC ACTIVITY.

The continuous chain of existence from the grossest form of unorganized matter to the highest crystalline forms of the inorganic world, is so manifest that no activity of the imagination is necessary to discern it. A tyro in evolutionary science would readily admit the possibility of the change of type from the lowest form of volcanic rock to the invariable arrangement of the

highest crystalline structures. Here, between the lowest animate forms in the organic world and the most perfect mineral forms, science has generally assumed a gap in the evolutionary chain. Although at the present time this break seems almost, if not entirely closed, whoever has watched the certain and unvarying operation of the processes of crystallization, along with the movements of the lowest organic forms, can hardly refuse to attribute the same degree of intelligence to the former as to the latter. There can be no chance in the movements by which the molecules of water always arrange themselves in congealing to the solid state. It does not merely *happen* that all snowflakes have the same hexagonal structure. Similarly, all matter, in the liquid state changing to solid, follows an invariable rule in crystallization. The same lines of force must exist in each crystallizing liquid to direct the formation of the solid structure as becomes apparent in water when it begins to freeze, or as radiate from the poles of the magnet, as shown by the arrangement of iron filings over them. Who can doubt an intelligence directing all these movements? Moreover, many of these higher crystalline forms in the inorganic world have their natural periods of growth, maturity, age, and decay, just as the bodies in the organic world. Their operations, assuredly, seem as purposeful as those of the lowest plant forms in securing their nourishment for growth and development. Furthermore, various scientists have recently bridged this gap between inorganic and organic worlds to their complete satisfaction. "The division between the so-called organic and inorganic worlds is wholly arbitrary. Those who try to uphold it, such men, let them rest assured of it, have never advanced to the limit of our knowledge".¹⁵

THE ADVENT OF LIFE.

For practically a century, science has firmly believed and all but proved that, at an opportune moment in the evolution of the material world, life had its origin in inert matter. As typical of this view, a recent scientist has set forth the idea somewhat as follows: Whatever may be the cause, matter, through repeated integrations and aggregations, constantly tends to assume forms more and more refined. Certain of these new combina-

tions finally reach a composition suitable for the sustenance of life. Gradually it assumes those characteristics belonging to matter in which life is found. Finally, there appears in a minute "mass of colloidal slime possessing the property of assimilation, and therefore of growth and reproduction",³ the primitive form of life. Other changes in this colloidal substance bring a more highly phosphorized part of this earliest living matter into a close resemblance to protoplasm. This, after myriads of generations of development, finally produces a nucleus. With this advance in structure, new qualities appear, and new processes begin their operation, among which is catalysis. The enzymes working in this process produce such differentiation of the primitive matter, that distinct individuals with specific characters become possible. Under the process of nutrition and reproduction through bodily division, the individual development finally results in perfection of a complete nucleus. Life is now inherent in cell structure. Henceforth, living beings are evolved from the cell. Thus, from undifferentiated matter, we can conceive the development of organic life up to forms like those of protista. From this point the mode of development is plain. The simplest evolutionary studies make clear the progress through the plant series up to the highest forms of plants, and through the animal series, up to those immediately below man.

THE INFLUENCE OF INNER IMPULSE.

In passing, it may not be out of place to offer a word regarding the efficacy of evolution as a developmental process as viewed from the theory of mind and matter just set forth. Since the two are so closely related, as explained above, the inference, easily and logically drawn, is that organic structures are not solely the result of material processes, but involve a co-operation of mental direction and selection; that is, structures are partly shaped and perfected by function, rather than that function is solely determined by structure, which is mechanically evolved. How many instances we see of organs adapting themselves to the uses made of them! Were the mechanistic theory of the development of function true, there would be no rudimentary organs. The existence of the organ would insure its efficient use. There is

first the desire or impulse to act in a certain way; this is followed by the action, then the appropriate adaptation of the organ to the use in which it is employed. The creature becomes a bird because it wishes to fly, a fish because it wishes to swim, just as the boy becomes a lawyer because he desires to become such. Mechanical processes readily evolve downward, *facilis descensus*, but it requires the inner urge of mind to grow upward, *per aspera ad astra*.

CONTINUITY IN PLANTS AND ANIMALS.

The long drawn out search for the "missing link" between the lower animals and man seems to have very generally resulted in the conclusion that there is no such a link, that none is missing. The seekers have usually been satisfied with the assertion that the intellectual distance between the native of Patagonia and a Thomas Edison is vastly greater than that between a well-bred dog or horse or monkey and the native Patagonian. At any rate, today, no one seems to be seriously troubled in thinking the connection from the lowest forms of animal life through the entire series up to man, complete. If it be considered that plants are lower than animals in the scale of organic development as they assuredly are in intelligence, it may be necessary to examine the alleged gap between plants and animals. A late writer on the sensitivity of plants,¹⁷ embodying the more recent discoveries and conclusions of distinguished botanists and plant physiologists, has shown that many of the life activities formerly thought to belong exclusively to animals are equally common to plants. She has shown that, since "the living cell hides in itself the 'riddle of life' ", irritability and the intelligent movement of plants are indicative in them of sensation and perception just as they are in animals. Multiplied testimony shows that various plants possess sense organs and respond to sensory stimuli. This gives to them, according to leading psychologists, the elementary mental processes of sensations, images, and affections. It seems necessary to admit instinctive activities in plants as well as in animals. The natural result is, then, that it is easier to attribute to plants consciousness than to deny or disprove it. They transmit stimuli received by the sense organs

to various parts of the body, respond to these stimuli by appropriate movements, and perform a complex series of acts adapted to a definite end. This is undeniably a primitive form of instinct.

Accepting analogy as valid reasoning, one cannot escape the conclusion that some plants have consciousness just as do men and animals. For instance, we believe that because other people act as we do in like circumstances, they must have minds similar to our own. Animals meet changing conditions in life as men do; hence they must have consciousness. And if plants perform purposeful and responsive actions similar to those of animals, we must admit that plants also have consciousness. This would make complete, then, the chain of organic development from the lowest form, either plant or animal, to the highest, including man.

THE ULTIMATE NATURE OF MATTER.

There remains to be considered the relation of consciousness to the organism, or that of the mind to matter. Since this relation was discussed at some length in the early part of the thesis, it may be well before submitting the final statement, to consider a related line of continuity: that between matter, force, and mind. It has been customary for scientists all along to recognize the universal co-existence of matter and force; wherever matter existed, there was force in some form, and wherever there was force, it must act on matter. The recognition of this universal concomitance has really implied a relation between matter and force that was not acknowledged. When the original theory of the composition of matter, as that of atoms of various sizes, was outgrown, and the theory now universally accepted was formulated, the real relation between energy and matter was definitely stated. It is now recognized that the atom in reality consists of a system of positive electrons, revolving about a negative electron, each of which carries a charge enormous in proportion to the size of the electron. Thus, it is believed, that the constituent element of matter is this electrically constituted atom, with its field and the inter-atomic space occupied by smaller electrons. Hence matter really resolves itself into force. Recalling that electricity is readily transformable into light, heat, and probably other modes of energy, the continuity be-

tween the world of force and the world of matter becomes readily apparent. All this is already acknowledged and accepted by science.

NO BREAK BETWEEN PHYSICAL ENERGY AND PSYCHIC ENERGY.

The recognition of the relation between the higher forms of physical energy and mental energy which constitutes the final chasm in this series, seems under the present discovery of science but a short step and one likely soon to be taken. Doubtless electricity and magnetic force are the highest modes of physical energy. As these become better understood, and their effects upon the human body and mind are more fully discovered, unquestionably a reciprocally interchanging relation between the electric and magnetic energy, and neural energy as well as mental energy, will be revealed. Assuming this bridge completed, the continuity from lowest matter to highest thought processes would be established; and all the realities of matter, energy and mind, would appear as progressive manifestations of one essential Spirit.

THE TRUE RELATION OF MIND AND BODY.

When it is realized that mind in all its activities, energy, in all its modes, and matter in all its forms, are only different manifestations of this one reality, and that pure spirit constantly possesses the power to operate through its transformations, the relation of mind to body is no longer difficult to understand. All carefully established experimental facts, as well as all logically deduced *a priori* arguments, contribute to a fuller understanding of their relation. There is no conflict between these fragments of truth. Wherever contradictions appear, it is because of unreliable or insufficient facts, or hastily drawn and illogical conclusions. Every fragment of truth, from whatever source, —from automatism, interactionism, parallelism, or elsewhere—serves to reveal, more and more, the underlying unity. Natural science, metaphysics and philosophy, are all working, largely unconsciously, toward the disclosure of *the ultimate continuity*. When the workers in each realm realize their true purpose and destiny, and cover their antagonisms and jealousies, so long prev-

alent, with kindly and co-operative regard, each for his fellow-worker, then will progress be greater than ever before, and the glimpse of finality not far distant, and the "ultimate of ultimate problems" near solution.

This broad principle here postulated readily accepts all of the definitely proved facts gained by materialism, interactionism, and parallelism. It is only their unsupported assumptions that must be discarded. The fact that each has felt under the necessity of reaching out into new fields to gain support for its own position as well as to assault the position of its antagonist, has led to the accumulation of an increasing amount of unquestioned truth. The real ground of support for each one has become firmer and firmer as the truth it maintains has become fuller and clearer.

A RECONCILIATION OF CONFLICTING THEORIES.

It may be well to examine briefly the main contentions of each of these theories in terms of this new insight. Materialism has all along held that the one reality in which all other existences and manifestations come, is matter; that through its development, life and consciousness have been evolved; that the circle of causal activities in the physical world is closed. The error of materialism has not been in the contention for a progressively evolving matter to respectively higher forms, but in its assumption as to the source of life and mind. The predication, by one school of materialists, of a certain amount of life and consciousness as inherent in each atom of matter, contained more of truth than its opponents realize. Spirit is life. Matter as a form of spirit possesses life, which is often suppressed, in a greater or less degree. The assertion of science that wherever there is matter there is also energy is true. But the statement does not express the whole truth. Back of the matter and the energy is life, because there is spirit. Matter has always seemed lifeless and inert because the bondage voluntarily assumed by Spirit during its involution prevents its active manifestation through matter. Of course, the facility with which life manifests through matter is dependent upon the form of the matter. The grossest matter permits so little manifestation of life that it is scarcely perceptible to common observation. Various writers,

both ancient and recent, have declared the existence of life in matter. "The ultimate elements of matter are feelings . . . the world is made up of a multitude of what we may call 'substantial feelings.'"¹⁸ Thus feeling, a psychic element, is made the active principle in the evolution of mind and matter. "Desire, then, in the beginning arose, the first germ of mind."¹⁹ "Feeling is a primitive datum. The question, therefore, is not how feeling arises, but how it is modified and how it gives birth to sensation."²⁰ "The earth is a creature combined into a unitary whole in form and substance, in purpose and effect, self-sufficient in its individuality, complete in its cycles, relatively independent of other similar but not identical creatures, evolving itself out of itself under the stimulus and co-determination of an external world."²¹ Assuming life and mind, in the form of feeling, present wherever matter exists, there is no difficulty in explaining evolution upon the principles already discovered. Under the nebular hypothesis all the transformations of matter from fiery mass and primitive atom through all the aggregations and differentiations in the formation of worlds, this feeling has been constantly present in the form of mutual attraction and chemical affinity as the active determining agent. And just as this feeling, operating under many forms and disguises has through endless attractions and repulsions, vicissitudes and readjustments, transformed the cloud-ball into mass, and mass into solid earth, so it has determined the segregations of men in the organization of societies and nations. "However different the agents, is there no suggestion that they are different stages of one uniform process, different epochs of one great historic enterprise, different results of a single evolutionary law?"²¹ It must be so. Where Materialism chiefly erred in assuming that when matter became sufficiently refined through the progressive changes in development, so that life might reveal itself through it and in it, is its postulation that here life began. What it assumed as a beginning was merely life's opportunity of expressing itself through a form of matter which permitted its fuller manifestation. As matter becomes more and more refined, life expresses itself through it with greater and greater freedom. It is because nervous and brain tissue is the most highly refined form of matter thus far

produced in the evolutionary process that consciousness manifests more directly in connection with it than with any other form of matter. This is why brain may be considered the seat of the mind. The mental development of an individual through the various stages from infancy, does not so much mean the growth of the mind, as a refinement and preparation of the nervous system for the free and facile operation of the mind through it. "Personally, I have no doubt that if a child from the Stone Age were placed in a modern city flat it would learn" to do all the things a modern city product learns. A diseased or injured brain does not mean a diseased or injured mind, but rather that the incapacity of the brain prevents the ready activity of the mind through it. Insanity means merely such disorder of the brain as renders it opaque to mental expression. Because a farmer breaks the plow he is using, he is none the less a ploughman, and is just as efficient and as strong, though he may lay the plough aside. That mind is in every individual only dependent upon the nature of the brain in which it operates for a more or less full and powerful manifestation is what the writer of the following must mean.¹⁶ Merely substitute the word *mind* in each case where the word "brain" occurs and *mental* for "physical", and his argument supports the view here presented. "Has there been a noticeable increase in brain power or of the physical development of the brain in the last five thousand or ten thousand years, a period of time during which man has practically passed from the savage to the present stage of enlightenment? There has been a marvelous increase and broadening of knowledge . . . savages and prehistoric races are not 'only children and adolescents of mature age.' Their brain processes are in kind identical with those of the most advanced thinkers in the golden age. The difference between the savage and the enlightened man, wide as it appears to be, is largely one of *training* and not capacity." "The idea is entirely a conceited one that differentiates the brain of man from that of other animals. Probably man's only advantage is his ability to store up knowledge and experience." The author evidently means that mind always has the power, in whatever brain it operates, and the degree of

efficiency of its action depends upon the intricacy of the development of the brain.

The claims of interaction for mutual causal relations between mind and body are entirely justified. The common origin and similarity in essential nature of matter and mind make diversified interaction thoroughly rational. That a spark of conscious energy is sufficient to set off a few grains of nervous excitation, and that this in turn is capable of exploding tremendous amounts of muscular energy, seems entirely conceivable, because of the inherent likeness of the different forms. The great seeming difference between these "disparate things", mind and matter, is such in appearance only. To ordinary perception, the dissimilarity seems so striking as to preclude any possibility of equivalents. In truth, the disparity between consciousness, nerve force, and physical energy, is no greater than that between the different forms which ordinary matter readily assumes under different conditions. Under the simple influence of heat, as commonly considered, a piece of ice readily changes to water. A continued application of this same force transforms the water into vapor. It is a fact of common knowledge that air, ordinarily a gas, may easily be made to assume each of the other two forms of matter, and it is a fact almost as familiar, that all the matter of the universe under varying conditions, chiefly those of temperature, may appear to perception in any one of these forms. It is no more irrational to suppose that spirit, with the superior power ordinarily attributed to it, may assume the forms of mind, energy, and matter, than to realize the change in appearance, if not in nature, which the above named substances undergo. There has doubtless been some underlying reason why the common-sense of men in general attributed interaction to mind and body. Whatever the common intuition of mankind leads toward, cannot be very far from the truth. Except one be steeped in the darkest materialism or most profound skepticism, he must be convinced that the common mind of humanity as well as the individual mind constantly approximates a more exact realization of the eternal verities. "When he, the Spirit of truth, is come, he will guide you into all truth" is the expression of the highest embodiment of Spirit in the world.

Parallelism is true so far as it postulates a fairly complete line of activity in both the physical and psychical realms. But its short-sightedness prevents it from perceiving the underlying reality which connects the two con-comitant existences. That it is a good working hypothesis for psychologists is not denied. Many a tool serves a good purpose until a better one is devised. The stage-coach was fairly satisfactory until the railway train superseded it. As the truth becomes clearer, parallelism must give way to an hypothesis more in accord with advancing knowledge.

It would seem quite incompatible in an attempt to establish a fundamental unity, to bring strong opposition to any theory or body of facts. This will account for the readiness with which the present discussion has accepted the main contentions of the three theories claiming the consideration here given. The chief claim of Materialism of the reality of matter and the theory of evolution tracing through its development, excluding only its view of the origin of life; the Interactionist view of mutual exchange of causality between mind and body; and Parallelism's continuous chains running through the physical and psychical sphere—are all acceptable as constituent elements in a thorough-going unity, and they add their contribution of fact to that obtained from other sources to make complete the chain of evidence in establishing the undoubted relationship between all phases of truth, as well as an underlying unity.

The intention of the thesis is so evident that a concluding statement seems almost superfluous. The first and larger portion of it is devoted to a presentation of the facts supporting, and also those opposed to each of the three theories of the relation of mind to body. Though Interactionism is preferable to either of the others, none of the theories has proved entirely satisfactory. This accounts for the attempt in the latter part of the thesis to present a view that is in accord with all of the facts bearing upon the relation of mind and body, and which is at the same time in harmony with philosophic thought. Spirit is assumed as the original and universal essence. While the preponderant portion of spirit retains its original form and nature, a part assumes a lower stage, that of mind, which involves both consciousness and thought, an individual being then a mere center of conscious-

ness in this realm. Another portion of spirit further differentiates itself and manifests as energy, capable of assuming all of the known modes. Still another portion transforms itself into the world of matter. Since these different manifestations, or forms, are all essentially one reality, there is no difficulty whatever in accounting for their relations—their interaction, and the transformation of one into another. According to the view here presented, that Spirit assumes the form of mind, energy, and matter, during its evolution, it is reasonable to postulate *Spirit* as the *Ultimate Continuity*.

QUOTATIONS.

1. W. T. Harris, Idealism.
2. L. W. Cole, Lectures.
3. Schaefer, Lectures.
4. Clifford, Lectures, and Essays.
5. Chas. Mercier, Physiology.
6. Frick, Researches.
7. Spenceer, Lectures and Writings.
8. Strong, Why the Mind Has a Body.
9. Sigwart, Logik.
10. James, Psychology, Addresses.
11. Jennings, Lectures and Writings.
12. Crile, Lectures.
13. Lange, History of Materialism.
14. Fiske, Outlines of Cosmic Philosophy.
15. Du Bois Raymond, Philosophy.
16. Schuler, Educational Review, Sept., 1912.
17. Yerkes, Mind in Plants.
18. Davidson, History of Education.
19. The Veda.
20. Rosmini, New Essay.
21. Fechner, Zend Avesta.

REFERENCES.

- James, The Principles of Psychology.
Stout, A Manual of Psychology.
Ladd, The Elements of Psychology.
Sully, The Outlines of Psychology.
Sully, The Human Mind.
Höfdding, Outlines of Psychology.
Calderwood, The Relation of Brain to Mind.
Hobbes, Body and Spirit.
Jennings, Heredity and Personality.
Schaefer, Nature, Origin and Maintenance of Life.
Yerkes, Mind in Plants.
Strong, Why the Mind Has a Body.
Royce, The Spirit of Modern Philosophy.
Paulsen, Introduction to Philosophy.
Perry, Present Philosophical Tendencies.
Bowne, Metaphysics.
Bastian, Brain as an Organ of Mind.
Lange, History of Materialism.
Fiske, Outlines of Cosmic Philosophy.
Bergson, Matter and Memory.
Bergson, Time and Free Will.
Eucken, Meaning and Value of Life.
Eucken, Life of the Spirit.
Philosophical Review; Monist; Mind; Journal of Philosophy,
Psychology and Scientific Methods; Science.
And various others.

